

No. 4. — *Some Planarians from the Great Barrier Reef of Australia.* By W. McM. WOODWORTH.

*Pseudoceros devisii*, sp. nov.

Fig. 1.

General color, bright orange-yellow, with a broad marginal band of deeper orange and a prominent median dorsal ridge along which the pigment is denser than over the general surface of the body, though not so deep in color as the marginal band. Length, 33 mm.; greatest breadth, 16 mm. From the Brisbane River near Brisbane, April, 1896.

The single specimen of this species, was given to me by Mr. C. W. de Vis, the curator of the Brisbane Museum, in whose honor it is named. The drawing for the accompanying figure (Fig. 1) was prepared by Dr. A. G. Mayer, but unfortunately the specimen was destroyed before it could be preserved, or studied in detail. The color and brilliancy of its markings, however, distinguish it from any described species.

*Idioplana australiensis*, gen. nov., sp. nov.

Figs. 2-5.

General color, bluish to yellowish cream when seen on black background, more reddish on white background. Small spots of dark reddish brown uniformly distributed over the dorsal surface except at extreme margin, which is free from pigment. Ventral surface without pigment, white. Slightly translucent; pharynx and male organs indistinctly visible, the vasa deferentia together with the penis forming a Y-shaped figure (Fig. 2). Expanded anteriorly, with a deep median fold or notch. Anterior or expanded portion provided with marginal eye-spots extending backwards to a distance about one third the total length of the animal from the anterior end. No marginal eye-spots in anterior median notch. Two tentacles, situated about one sixth the total length from the anterior end; anterior faces of tentacles provided with eye-spots, and a scattered group of eye-spots over the brain region extending as far forwards as a line joining the tentacles (Fig. 3). Length 50 mm.; greatest breadth 22 mm. A very sluggish form. Only one specimen, taken on the reef at Hope Island, May 12.

The genus *Idioplana* differs from other Planoceridæ chiefly as regards the sexual organs. The closely approximated sexual openings lie in the anterior

part of the posterior third of the body, and in the preserved specimen the male gonopore was at a distance of less than 1 mm. from the female opening. There is a large muscular penis enclosing a spacious prostate gland ("Körnerdrüse"), which communicates with the ductus ejaculatorius at the tip of the organ, the two ducts opening to the exterior almost together (Fig. 5). The ciliated ductus ejaculatorius extends along the ventral wall of the penis, at the posterior end of which it divides into two vesiculæ seminales, convoluted tubes with muscular walls (not well shown in the diagram, Fig. 4). The vasa deferentia are two large convoluted canals of nearly uniform calibre which connect with the vesiculæ seminales at the root of the penis. There are also two smaller posterior seminal canals which unite with the main anterior canals immediately before these join the vesiculæ seminales (Fig. 4). As the specimen was in a late stage of sexual activity, no trace of the testes could be found, and the vasa deferentia were only partly filled with spermatozoa.

The female gonopore leads into a spacious bursa, from which the vagina, with diminishing calibre, leads upward and backward over the male organ, and receives the oviducts which open into it opposite to one another at a point above the posterior limits of the penis. The canal, which is ciliated throughout, and which from now on is reduced in diameter and uniform in calibre, passes forwards and downwards over the penis, reaching nearly to the ventral wall, and then bends upwards and backwards again, passing over the vagina and terminating a little posterior to the female gonopore in a vesicle or enlargement, "accessorische Blase" (Figs. 4 and 5).

The terminology employed in the description of the sexual organ of this species is not that which is customarily used in descriptive anatomy of Polyclads, but corresponds to the terminology applied to Triclads. The so called "accessory vesicle" I believe to be directly homologous with the uterus of Triclads, and that fertilization takes place in it. Although the single specimen of the species under consideration was far advanced sexually, there was still a packet of spermatozoa in the uterine vesicle, and Plehn<sup>1</sup> has figured the uterine vesicle of *Latocestus atlanticus* containing both ova and spermatozoa.

### *Diposthus corallicola*, gen. nov., sp. nov.

Figs. 6-11.

Color, yellowish rose; very opaque except at margin, which is bluish and very translucent. Of the internal organs the position of the pharynx only can be seen as a lighter ragged median streak. Two closely approximated groups of eye-spots about one tenth the total length of the animal from the anterior end. Two pointed conical tentacles close to anterior margin. Length, 15-40 mm.; greatest breadth, 6-13 mm. Abundant under coral rock on reef at Hope Island, May 12. A very active form.

<sup>1</sup> Plehn, M. Neue Polycladen gesammelt von Herr Kapitän Chiercha, etc. Jen. Zeitschr. f. Naturw., Bd. XXX. p. 160, Taf. XI. Fig. 10, 1896.

The peculiarities of the male sexual organs of this form have necessitated the establishment of a new family for its reception (Diposthidæ). The salient feature is the separation of the penis and prostate gland into two distinct organs, both of which are doubtless intromittent. The prostate gland ("Körnerdrüse") occupies the male genital atrium together with the penis, and lies posterior to it directly over the gonopore. It is slightly larger than the penis, and both organs are nearly pendent or perpendicular in position (Figs. 8, 9, and 11). The prostate gland is provided with a heavy layer of circular muscles, which together with the epithelial covering of the organ decrease in thickness toward the free end, and at the very tip are entirely lacking. I could not satisfy myself that there was an opening at this point, nor could I demonstrate any distinct lumen, which is explicable, possibly, by the fact that all of the specimens were in a late stage of sexual activity, all traces of testes, vasa deferentia, ovaries, and oviducts having disappeared. Two kinds of nuclei occur in the prostate gland, deeply staining nuclei which are found chiefly under the zone of circular muscles, and more lightly staining granular ones, which are accumulated at the free end of the organ (Fig. 9). The latter kind I am inclined to look upon as belonging to the glandular cells of the prostate. There are two large vesiculæ seminales the ducts of which unite to form the ductus ejaculatorius (Fig. 11). The seminal vesicles were filled with spermatozoa. The female gonopore opens into a large atrium, the walls of which are thrown into folds, and into which numerous unicellular glands, the shell glands, open. The walls of the chamber are also highly muscular, to function doubtless as a bursa copulatrix. Two of the specimens that were sectioned showed remains of uterine vesicles. One specimen exhibited two pairs of vesicles, and in the other there were three vesicles on one side of the body and two on the other side, with a third duct which ended abruptly, indicating the atrophy of the third vesicle of that side. In the specimen with but two pairs of uterine vesicles the vesiculæ seminales had also disappeared, but their ducts could be traced back for a considerable distance from the penis. The full number of uterine vesicles can only be determined from material in an earlier stage of sexual activity.

The uterine vesicles cannot be compared exactly with the uterine glands figured by Lang<sup>1</sup> for *Oligocladus sanguinolenta*, for in that species they are only indirectly connected with the uterus by means of the oviducts. They are better comparable with the uterine vesicles of *Uteriporus vulgaris* of Bergendal,<sup>2</sup> and I look on the uterine vesicles of *Diposthus* as different chambers of a multipartite uterus, having at least six such parts. The vesicles of each side of the body communicate with a common duct, the ducts of opposite sides uniting to enter the female genital atrium (Fig. 11). As evidence that the

<sup>1</sup> Lang, A. Die Polycladen, Fauna n. Flora des Golfes v. Neapel, Monog. XI., Taf. XXIII. Fig. 3. 1884.

<sup>2</sup> Bergendal, D. Studier öfver Turbellarier. II. Om Byggnaden af *Uteriporus*, etc. Lunds Univ. Års-Skrift, Fys. Sällsk. Handlingar, Bd. VII. 1896.

uterine vesicles are but separate chambers of a compound organ, is the simultaneous occurrence in these chambers of both ova and spermatozoa. Figure 10 represents a section through one of the uterine vesicles, showing an ovum surrounded by a dense mass of filaments, which in every way resemble the spermatozoa found in the seminal vesicles of the same specimen. Lang (*op. cit.*, p. 297) speaks of skeins of fine filaments resembling spermatozoa in the accessory vesicles, and of "lumps" which he doubted not were fragments of eggs that had found their way in there.

## EXPLANATION OF THE PLATE.

## ABBREVIATIONS.

<i>dt. ejac.</i>	Ductus ejaculatorius.	<i>ut.</i>	Uterine vesicles.
<i>gl. pr.</i>	Prostate gland.	<i>vag.</i>	Vagina.
<i>gl. sh.</i>	Shell gland.	<i>v. d.</i>	Vasa deferentia.
<i>ov.</i>	Ovum.	<i>ves.</i>	Uterine vesicles.
<i>ov'dt.</i>	Oviduct	<i>v. sem.</i>	Vesiculæ seminales.
<i>pe.</i>	Penis.	♂	Male gonopore.
<i>sp'z.</i>	Spermatozoa.	♀	Female gonopore.

- Fig. 1. *Pseudoceros devisii*, sp. nov. Drawn from life by A. G. Mayer.  $\times 2$ .  
 Fig. 2. *Idioplana australiensis*, gen. nov., sp. nov. From life; slightly enlarged.  
 Fig. 3. *Idioplana australiensis*. To show the arrangement of the tentacular and epi-cerebral eye-spots.  $\times 4$ .  
 Fig. 4. *Idioplana australiensis*. Diagram of sexual organs.  $\times 10$ .  
 Fig. 5. *Idioplana australiensis*. A drawing from five longitudinal consecutive sections to show the course of the sexual ducts.  $\times 20$ .  
 Fig. 6. *Diposthus corallicola*, gen. nov., sp. nov. Drawn from life; natural size.  
 Fig. 7. *Diposthus corallicola*. Anterior end of corrosive sublimate preparation to show the arrangement of tentacular eye-spots.  $\times 4$ .  
 Fig. 8. *Diposthus corallicola*. Longitudinal section through gonopores.  $\times 47$ .  
 Fig. 9. *Diposthus corallicola*. Enlarged drawing of prostate gland, from same section.  $\times 170$ .  
 Fig. 10. *Diposthus corallicola*. Diagram of sexual organs.  $\times 50$ .  
 Fig. 11. *Diposthus corallicola*. Section through a uterine vesicle.  $\times 160$ .